

1. An electrochemical cell comprising:

(a) a proton exchange membrane, said proton exchange membrane having a first face and a second face;

(b) an anode, said anode having an inner face and an outer face, said inner face of said anode being positioned along said first face of said proton exchange membrane and being electrically coupled thereto;

(c) a cathode, said cathode having an inner face and an outer face, said inner face of said cathode being positioned along said second face of said proton exchange membrane and being electrically coupled thereto;

(d) a metal screen for defining a first fluid cavity, said metal screen having an inner face and an outer face, said inner face of said metal screen being placed in contact with said outer face of said anode;

(e) a compression pad for defining a second fluid cavity, said compression pad being electrically-conductive, spring-like and porous and having an inner face and an outer face, said inner face being placed in contact with said outer face of said cathode;

(f) means for axially containing fluid present within said metal screen and said compression pad; and

(g) means for peripherally containing fluid present within said metal screen and said compression pad.

2. The electrochemical cell as claimed in claim 1 wherein said compression pad includes carbon.

3. The electrochemical cell as claimed in claim 1 wherein said compression pad has a thickness of about 0.005 inch - about 1 inch.

4. The electrochemical cell as claimed in claim 1 wherein said axially containing means comprises a first separator placed in contact with said outer face of said metal screen and a second separator placed in contact with said outer face of said compression pad.

5. The electrochemical cell as claimed in claim 4 wherein each of said separators is electrically-conductive.

6. An electrochemical cell stack comprising two electrochemical cells as claimed in claim 4, said two electrochemical cells being arranged in series in a bipolar configuration, with said first separator of one of said two electrochemical cells being in contact with said second separator of the other of said two electrochemical cells.

7. The electrochemical cell stack as claimed in claim 1 wherein said compression pad comprises carbon and a polymeric or elastomeric material.

8. An electrochemical cell comprising:

(a) first and second separators, said first and second separators being electrically conductive, being spaced apart from one another and being generally parallel to one another;

(b) a proton exchange membrane disposed between said first and second separators;

(c) an anode, said anode being positioned between said proton exchange membrane and said first separator and being electrically coupled to said proton exchange membrane;

(d) a cathode, said cathode being positioned between said proton exchange membrane and said second separator and being electrically coupled to said proton exchange membrane;

(e) a metal screen, said metal screen being positioned between said anode and said first separator and being electrically coupled to each of said anode and said first separator;

(f) an electrically-conductive, spring-like, porous pad, said electrically-coupled, spring-like, porous pad being positioned between said cathode and said second separator and being electrically coupled to each of said cathode and said second separator; and

(g) a pair of cell frames, one of said cell frames being in peripheral contact with said metal screen, the other of said cell frames being in peripheral contact with said electrically-conductive, spring-like, porous pad.

9. The electrochemical cell as claimed in claim 8 wherein said electrically-conductive, spring-like, porous pad includes carbon.

10. The electrochemical cell stack as claimed in claim 8 wherein said electrically-conductive, spring-like, porous pad comprises carbon and a polymeric or elastomeric material.